Amendments to the Claims

The listing of claims will replace all prior versions, and listings of claims in the application.

1. (Previously amended) A polymerizable nanocomposite material in solid or gel form, containing
   a) from 4.9 to 95.9% by weight of a soluble polymer;
   b) from 4 to 95% by weight of a partially or fully condensed silane selected from acrylosilanes, epoxysilanes, acryloalkoxysilanes, acryloepoxysilanes, epoxyalkoxysilanes, alkoxysilanes and alkylalkoxysilanes, the silane having an inorganic condensation ratio of from 33 to 100% and an organic conversion ratio of from 0 to 95%;
   c) from 0 to 60% by weight of an acrylate;
   d) from 0.1 to 50% by weight of surface-modified nanoscale particles selected from oxides, sulfides, selenides, tellurides, halides, carbides, arsenides, antimonides, nitrides, phosphides, carbonates, carboxylates, phosphates, sulfates, silicates, titanates, zirconates, aluminates, stannates, plumbates and mixed oxides thereof;
   e) from 0 to 50% by weight of a softener;
   f) from 0 to 5% by weight of an additive selected from thermal or photochemical crosslinking initiator, sensitizer, wetting agent, adhesion promoter, rheological additive, antioxidant, stabilizer, colorant, photochromic and thermochromic substance, and a combination thereof; further where weight, in each case is expressed in terms of the total weight of solids in the nanocomposite material.

2. (Previously amended) The nanocomposite material as claimed in claim 1, characterized in that the soluble polymer a) is selected from polyacrylate, polymethacrylate, polyepoxide, polyvinyl alcohol, polyvinyl acetate and polyvinyl butyral further where the polymer is soluble in an organic solvent.

3. (Previously amended) The nanocomposite material as claimed in claim 1, characterized in that the silane b) is selected from

methacryloxypropyltrimethoxysilane, acryloxypropyltrimethoxysilane, dimethyldimethoxysilane, dimethyldiethoxysilane, 3-glycidyloxy-propyltrimethoxysilane, vinyltriethoxysilane, methyltriethoxysilane and a combination thereof.

4. (Previously amended) The nanocomposite material as claimed in claim 1, characterized in that the acrylate c) is selected from methyl methacrylate, diol diacrylate and diol dimethacrylate.

5. (Previously amended) The nanocomposite material as claimed in claim 1, characterized in that the nanoscale particles d) are surface-modified with compounds selected from compounds containing (meth)acryl, allyl, vinyl, epoxy, hydroxyl, carboxyl, amino groups and a combination thereof.

6. (Previously amended) The nanocomposite material as claimed in claim 1, characterized in that the nanoscale particles are selected from surface-modified SiO_2, TiO_2, ZrO_2, and Ta_2O_5 particles.

7. (Previously amended) The nanocomposite material as claimed claim 1, containing from 0.1 to 30% by weight of a softener.

8. (Previously amended) A process for the production of a nanocomposite material as claimed in claim 1, characterized in that the silane b) is partially or fully condensed by adding a hydrolyzer and optionally polymerized by UV irradiation, and mixed with one or more of the components a), c) to f), or the silane b) is first mixed with one or more of the components a), c) to f) and then condensed and optionally polymerized, and optionally organic solvent is subsequently removed.

9. (Presently canceled)

10. (Previously amended) A film with a refractive index gradient, comprising one or two transparent plastic films which are coated with a nanocomposite material as

claimed in claim 1, further where a refractive index gradient has been produced by applying an electrical potential difference, electron irradiation, holography, lithography or by local illumination.

11. (Previously amended) A process for the production of a film with a refractive index gradient as claimed in claim 10, characterized in that a nanocomposite material as claimed in claim 1 is applied to a transparent plastic film, organic solvent is allowed to evaporate, optionally the nanocomposite layer is laminated with a transparent cover film, a refractive index gradient is produced in the nanocomposite layer by applying an electrical potential difference, electron irradiation, holography, lithography or by local illumination, and the refractive index gradient is subsequently fixed by complete thermal and/or light-induced crosslinking of the nanocomposite material.